Health and Safety
Executive

HSE

BSEE 2015 Domestic & International standards Workshop

Quality Management & Equipment Reliability in the Context of the GB Regulatory Framework

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Introduction

- HSE Energy Division (Offshore)
  - Government regulatory body responsible for safety regulation across all oil and gas operations on the UKCS
- Safety case assessment (fixed platforms, FPSOs, MODUs)
- Inspection & incident investigation
- Standards & guidance (with industry)
- Partner with Dept. of Environment (DECC) as Offshore Safety Directive Regulator (OSDR) – EU Offshore Safety Directive w.e.f. 18 July 2015 – see www.hse.gov.uk/osdr

Incident / Failure Reporting

- Injuries & fatal accidents
- Dangerous Occurrences (General)
  - Failure of lifting equipment
  - Failure of pressure vessels / pipework
  - Electrical incidents causing explosion or fire
  - Well blow-out / failure
- Dangerous Occurrences (Offshore)
  - Fire / explosion
  - Hydrocarbon release
  - Structural collapse
  - Dropped objects
  - Weather damage
  - Collisions (actual & potential)
  - Subsidence
  - Loss of stability / buoyance
  - Evacuation
  - Failure of a safety and environmental critical element (EU Offshore Safety Directive)

Lifecycle Management

- Independent verification of Safety and Environmental Critical Elements (SECEs) and Specified Plant (SP)
  - Duty holder (owner/operator) to establish a scheme to ensure SECEs and SP are suitable and remain in good repair and condition
    - Periodic examination by a verifier (independent and competent person)
- Well examination
  - 3rd party periodic examination of all parts of the well to ensure so far as is reasonably practicable that there can be no escape of fluids from the well

HSE Inspection

- Inspection guides:
  - Control of work
  - Evacuation escape & rescue
  - Operational risk assessment
  - SCE Management & verification
  - Temporary refuge integrity
  - Wells personnel competence
  - Loss of stability and positioning
  - Well control
  - Mechanical handling & crane operations
  - Maintenance management
  - Loss of containment
  - Noise and vibration

Examples

- Hydrocarbon releases
- Chloride stress corrosion of stainless steel ‘lokring’ pipe connectors (HSE Safety Alert ED 01-2015)
- Moorings (HSE Offshore information sheet 4/2013)
- Drill floor machinery (HSE Offshore information sheet 4/2013)
- Differential pressure gauges (HSE Offshore information sheet 9/2009)

Hydrocarbon releases

- Statutory reporting supplemented by voluntary industry reporting of additional information
- Selected incidents fully investigated by HSE
- Data compiled by HSE – www.hse.gov.uk/hcr3/
- Feeding into joint HSE / industry project on failure frequencies

Chloride Stress Corrosion

- Background of incidents in chemical manufacturing
  - HSE Research report RR902
  - Lokring connectors – in service failures offshore – HSE Safety alert ED 01-2015

Moorings

- Learnings from UKCS mooring failures
- Offshore Information Sheet 4/2013
- ISO 19901-7, Annex 2
- Inspection
  - OGUK Mooring integrity guidance
  - API RP21 & API RP 2SM
  - Verification as an SCE
- Training in use of thrusters

Drill floor machinery

- Incidents – collisions resulting in dropped objects, torque wrench clamp on
- Lack of industry awareness regarding machinery safety (functional safety) standards
- Lack of understanding of problems associated with programmable systems
- HSE Offshore information sheet 4/2013

Differential pressure gauges

- In service failure resulting in HCR
- Brittle mode fracture of fasteners
- Hydrogen induced (H_2S)
- Manufactured from 15Cr/5Ni steel
- Unsuitable for offshore environment
- Duty holder action advised to identify useage (Offshore information sheet 9/2009)

Conclusions

- Incident reporting, 3rd part verification and well examination are key
- Safety alerts & offshore information sheets are developed to disseminate learnings to industry
- Research is commissioned, when appropriate, to further understand issues